99th Congress
2d Session

COMMITTEE PRINT

S. PRT.
99-182

ANNUAL REPORT

OF THE

TECHNICAL SERVICES STAFF

TO THE

CHAIRMAN OF THE COMMITTEE ON RULES AND ADMINISTRATION UNITED STATES SENATE

DECEMBER 1984

Printed for the use of the Committee on Rules and Administration

U.S. GOVERNMENT PRINTING OFFICE
63-591 O WASHINGTON : 1986

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

S682-2

COMMITTEE ON RULES AND ADMINISTRATION

CHARLES McC. MATHIAS, JR., Maryland, *Chairman*

MARK O. HATFIELD, Oregon	WENDELL H. FORD, Kentucky
JAMES A. McCLURE, Idaho	CLAIBORNE PELL, Rhode Island
JESSE HELMS, North Carolina	ROBERT C. BYRD, West Virginia
JOHN W. WARNER, Virginia	DANIEL K. INOUYE, Hawaii
ROBERT DOLE, Kansas	DENNIS DeCONCINI, Arizona
TED STEVENS, Alaska	PAUL SIMON, Illinois
E.J. (JAKE) GARN, Utah	ALBERT GORE, JR., Tennessee

JOHN B. CHILDERS, *Staff Director*
WILLIAM McWHORTER COCHRANE, *Minority Staff Director*

TECHNICAL SERVICES STAFF

JOHN K. SWEARINGEN, *Director*

ANTHONY L. HARVEY
PATRICK B. SARMAN
RONALD L. HICKS

CONTENTS

	Page
Summary	1
Guidelines for Information Processing and Computer Service Activities	3
Senate Office Automation Program (Sarman)	5
Hearing on Computers and Communications in the Senate	5
Pilot Test Results	5
Request for Proposals (RFP)	6
Final Selection	6
Selection of Three Vendors	7
Installation of Systems	7
Computer Center Equipment (Sarman)	9
Upgrades to Mainframes	9
Senate Information Retrieval Systems (Harvey)	11
Senate Legis	11
Enhancement to Legis	12
Capabilities of Legislative Tracking Reports	13
Additions in 1980	14
Additions in 1981: Rules and Precedents	14
Rules	15
Precedents	15
Legis Nominations Subsystem	16
Senate Agenda	16
CRS-Terminating Programs	16
Additions in 1982	16
Business Before the Senate	16
Developments in 1983	17
Committee Assignment System	17
New Systems and Services in 1984	17
Senate Record Votes in Legis	17
Senate Legislative Calendar	18
Specialized Office Automation Systems	18
Congressional Record: Background	19
Congressional Record Index	20
Committee Meeting and Hearing Schedules	20
Data Bases at the Library of Congress and the Congressional Research Service	21
Policy Analysis Support Systems and Mass Mail (Hicks)	23
Budget Processing	23
Statistical Analysis	24
Economic Analysis	25
Geographic Reporting System	26
Graphics	26
Mass-Mail	27
Office Automation for Committees (Hicks)	29

APPENDIX I

AUTOMATION SERVICES TO SENATORS AND COMMITTEES

Information Retrieval Systems	31
JURIS—Legal Information Retrieval	31
Legis	31
Legislative Tracking	33
Legis Committee Meeting and Hearing Schedules	33
Library of Congress and Congressional Research Service	33

Page

Information Retrieval Systems—Continued
Data Bases 33
Vote Tally 34
Office Automation Systems 34
Bill Drafting 34
Correspondence Management System 34
Electronic Printing 34
Equipment Inventory Records Management System 34
Hearing Transcripts 34
Indexing: Election Campaign Records 34
Indexing: Inquiries and Investigations 35
Indexing: Legislative Histories 35
Indexing: Litigation Files 35
Indexing: Office Files 35
Mail: Support for Response to Organized Mail Campaigns 35
Microfilming 35
Micrographics Publications 35
Newsletter Address File 35
Parking Department 35
Policy Committee Information System 35
Policy Analysis Support Systems 36
Budget Analysis System 36
Charts and Graphs 36
Consolidated Federal Funds Report 36
Econometric Modeling 36
Federal Assistance Awards Data System 36
Geographic Reporting System 36
Graphics 37
Program Review System 37
Questionnaire Tabulation 37
Statistical Analysis and Specialized Data Bases 37

APPENDIX II

SERVICES OF THE SERGEANT AT ARMS

Capitol Police 39
Computer Center 39
Parking Department 39
Service Department 39
Telecommunications Department 39
Training and Assistance 39

SUMMARY

At the end of the 97th Congress the Rules Committee embarked on a unique and far-reaching experiment in the application of computer technology in the Senate. A pilot test was conducted under the direction of the Committee in twelve Senators offices. The purpose of the test was to determine the practicality and usefulness of computers installed in a Senators' offices operating under the control of the Senators' staff.

Upon the successful completion of the pilot test the Committee approved regulations making office automation systems available to any Senator or committee chairman requesting one. At that time the Committee also authorized a competitive procurement to acquire the needed systems. The Committee decided that Senators should be able to choose from among a list of qualified vendors and authorized contracts with the three vendors ranked highest in the procurement.

A commitment was made to complete as many installations as possible before January 1985. The Senate Computer Center coordinated the logistics of the installation effort. The Sergeant at Arms assigned four crews to install cables and the Architect of the Capitol assigned three crews to make the electrical connections and install floor receptables. Each of the vendors was given space in Senate office buildings in which they installed a "training" system. At peak effort six systems, two from each vendor, were installed per week.

Installations began in the fall of 1984 after Senators chose from among the three companies selected to supply systems. By the end of December 1984, 60 offices had received training, and processors, storage units, and an initial set of terminals had been installed in 55 Senators offices.

Acceptance and popularity of the program is attested to by the backlog of over 20 offices waiting for installation in January.

Pilot office automation systems were also approved for the Armed Services and Foreign Relations Committees. One system has been replaced with one of the office automation systems selected for Senators' offices. The second, which contains the full range of office automation capabilities, has been successfully installed and is currently fully operational. Packets were distributed to all committees for use in determining and documenting their office automation requirements. Upon completion of their feasibility study and OA plan and acceptance by the Rules Committee, each committee will be authorized a computer system.

The central computing facility was not neglected. After a study concluded that additional capacity was urgently needed, the committee authorized a procurement to cover the next five year's needs. A contract was authorized for a program to furnish equipment in increments over the five year period. One computer was

installed in March followed by another in December. The older equipment was released at various times during 1984.

Budget processing received attention also. The analytical tools of budget and program analysts on committee staffs were upgraded with personal computers, electronic spreadsheets, dot matrix printers, six-pen plotters, and a method for transferring data from central data bases on the host computers to the hard disks on the PCs.

Legis continued to receive major enhancements and major new systems and services were provided to users throughout the Senate during 1984. The office of the Assistant Majority Leader began entering the Majority Whip Notice, a report prepared weekly outlining the anticipated Senate legislative activity for the week ahead. Two reports on record votes of the Senate were added to Legis. The Senate's Calendar of Business, also known as the Senate Legislative Calendar was added. This calendar is updated throughout each day the Senate is in session by staff in the office of the Secretary of the Senate.

A new service, Network News, provides daily computer indexes, summaries and transcripts of televised national news and public affairs programs. The service includes a summary and analysis of the broadcast day, indicating prominent stories and comparing and contrasting the networks' treatment of these stories.

A significant upgrade to the Legislative Counsel's system, approved by the Rules Committee in 1983, is being successfully installed during the final months of the 98th Congress.

A technical task force recommended to the Joint Committee on Printing that magnetic tapes of the full text of each issue of the Congressional Record be made available daily to the Library of Congress' Automated Systems Office, the House of Representatives' House Information Systems, and the Senate Computer Center. It is anticipated that each of these computer centers will prepare a retrieval system of the Record for their respective users during the early part of 1985. The Joint Committee on Printing also approved the provision of the Congressional Record Index on magnetic tape so each body may provide an on-line information retrieval capability to their respective users.

Mass-mail regulations adopted by the Committee on Rules and Administration authorized new services to facilitate mail handling by Senators' offices. One service permits Senators to have mail which was generated by organized mail compaigns keypunched by commercial contractors. The contractors prepare a magnetic tape containing the names and addresses from which the Computer Center produces labels. The labels are then used with "Dear Friend" response letters.

A second new procedure allows the use of postal patron mail for a newsletter whenever a name-addressed mailing would go to more than 73.3 percent of the addresses in a mailing area. Through these changes and extensive coordination with the Postal Service, the Service Department was able to produce savings in the millions of dollars.

GUIDELINES FOR INFORMATION PROCESSING AND COMPUTER SERVICE ACTIVITIES

The Committee on Rules and Administration shall have authority concerning policy, organization, initiation, implementation, operation and evaluation of all matters concerned with information processing and communications as they relate to mechanization, automation, computerization, or related functions.

All Senators, Committee Chairmen and Officers of the Senate shall address requests for such services to the Chairman of the Committee on Rules and Administration, with supporting documentation of the requirements.

At the direction of the Committee, its staff will consult with the requester, make any additions necessary to the documentation, and prepare a report for consideration by the Committee.

If the Committee favorably considers a study or action for initiation or implementation, it will direct its staff to take responsibility for the performance of the specified task in full consultation and agreement with the requester, who will be considered to be the user or recipient of such task or service. All statements of requirements, justifications, cost analyses and recommendations will be developed by the staff in conjunction with the user.

At the direction of the Committee, the staff will act as a project director (or will designate a project director) for the performance of all tasks or projects. This would include the selection, monitoring and evaluation of contractors and consultants, as well as Senate staff component support. In addition, the staff will be responsible for (or will delegate responsibility for) all implementation, operation, user orientation and training, and evaluation of any approved systems, including the procurement (or delegation of such procurement) of any supporting equipment or services.

At the request of a Senator, committee, or office, the Committee on Rules and Administration will provide for professional consultation concerning problems related to information processing, ongoing systems under the jurisdiction of the Senate, or systems proposed to the Committee for consideration.

The Committee will establish all policy concerning the operation of new services and systems, and will maintain the authority to have its staff be responsible for such operation, if so required. In addition, the Committee will assume the authority and responsibility for any related supporting activities not so stated above, as may become necessary from time to time.

Nothing in the foregoing is intended to preclude Senators, Committees, or Officers of the Senate from conducting independent preliminary studies or investigations of administrative practices and procedures, providing any consequent commitments in the name of the Senate with regard to information processing services be made through and by the Committee on Rules and Administration.

SENATE OFFICE AUTOMATION PROGRAM (Sarman)

A pilot test under the direction of the Committee was conducted with the assistance of the Senate Computer Center in twelve Senators offices. Upon the successful completion of the pilot test the Committee approved regulations making office automation systems available to any Senator or committee chairman requesting one. At that time the Committee also authorized a competitive procurement to acquire the needed systems.

Senators chose from among the three companies selected to supply systems, and installations began in the fall of 1984. By year's end processors, storage units and an initial set of terminals had been installed in over 50 Senators offices.

Hearing on computers and communications in the Senate [1]

The Committee held a hearing on December 8, 1982, on the use of computer and communication systems in the U.S. Senate. Testimony was received from the Honorable Mark O. Hatfield and several leaders in the computer and communications industries. Prepared statements were submitted by several other Senators and industry leaders.

At a meeting of the Committee on December 15, 1982, a pilot project was authorized to determine if office automation systems (which includes minicomputers with multiple workstations, standalone word processors, or standalone microcomputers, and software for word processing, electronic spreadsheets, electronic mail, scheduling, and data base creation and manipulation) offered any benefits that would be useful in the environment of a Senate office. The Committee authorized this test in 12 offices on equipment to be supplied by 6 equipment vendors.

Pilot test results

The test demonstrated that staff of Senate offices, many of whom had no prior background in the use of computers, could quickly learn how to operate office automation equipment and could just as quickly put it to productive use in the work of a Senate office.

On November 1, 1983, a report [2] of the test was presented to the Committee with the following recommendations:

(a) Office automation equipment should be provided to offices as a "usual and standard" item of supply either

(1) according to regulations governing the allocation of such equipment promulgated by the Rules Committee

---

[1] Hearings before the Committee on Rules and Administration, 97th Congress, 2d Sess., Dec. 8, 1982.

[2] Committee Print, S. Prt. 98-120, The Pilot Test of Office Automation Equipment in the Offices of United States Senators by the Committee on Rules and Administration.

(2) purchased directly by offices from an "approved list", with funds from a separate office account.

(b) Issue a "Request for Proposal" for office automation equipment.

(c) Defer a final decision on (a) above, until the responses to the Request for Proposal are received.

Request for proposals (RFP)

The Committee authorized the staff to solicit proposals from industry to supply office automation systems to perform the tasks identified in the pilot. The Request for Proposal (RFP 83-3) was issued to prospective vendors on December 15, 1983, asking for formal proposals to be submitted by January 31, 1984. The RFP specifications were designed to furnish offices with systems which provide immediate assistance in areas such as word processing, records processing, office budgeting, scheduling, and to provide a base from which other services can be provided. The document was prepared by the Rules Committee staff with the assistance of the Senate Computer Center and with suggestions from several Senators' offices.

Prospective vendors were informed the response to the RFP was to be submitted in three sections:

I. The Technical Proposal
II. Management Support Plan
III. The Cost Proposal

and that proposals would be evaluated using the following formula:

Technical Proposal: 600 points
Management Support Plan: 150 points
Cost Proposal: 300 points

The technical proposal was subdivided into hardware, software, and telecommunications, and the Management Support Plan was subdivided into initial support, maintenance, and post installation support categories. Although the RFP stated that the equipment would be installed only in Washington initially, a requirement for communications was included because this service would be made available to State offices in the future.

By the 5 PM, January 31, 1984, deadline, 29 responses were received. The replies were examined by Rules Committee staff for adherence to the mandatory requirements stated in the RFP and 15 of these, which appeared to meet all mandatory conditions on first reading, were sent to the Computer Center for further evaluation.

At the Computer Center, each proposal was given an exhaustive review and was rated against detailed evaluation criteria and ranked from 1 through 15. The review at this point covered only the written document. Point values were assigned to each sub area taking the relative importance of each into account. Proposals 1 through 6 were within a 110 point cluster, while the spread between 6 and 7 was 85 points, establishing a competitive range. The ranked proposals were then returned to the Rules Committee.

Final selection

Demonstrations were scheduled with each of the six finalists for the user community in the morning and for the Computer Center in the afternoon. A script developed by the Computer Center detail-

ing features to be demonstrated was distributed to the finalists. Each demonstration ran approximately two hours. Checklists developed for office staffs and Computer Center personnel were used during demonstrations to rate the products. The Computer Center had the added responsibility to verify that all hardware and software features requested were demonstrated and that only software that was formally proposed was demonstrated. An employee of the Architect of the Capitol verified environmental requirements such as power, air conditioning, size and weight. At the conclusion of the demonstration each of the finalists was given written questions to clarify certain aspects of their proposal and demonstration. The Computer Center's initial evaluation was then adjusted by results of the demonstration and resubmitted to the Committee.

The user panel was composed of staff from 37 Senators' offices and 3 committees. Their responsibility was to verify the existence of mandatory software features and to rate each feature on usability. When all visits had been completed, the users reviewed their evaluation forms and summarized their findings. They were asked to name the company they would choose if the Senate selected a single supplier and who they would recommend if several suppliers were selected. Only the evaluations of those 28 persons who attended 5 or more demonstrations were counted.

When they had completed their demonstration the six finalists were asked to submit their "best and final" offer by 5 PM on May 11, 1984. They were asked to submit pricing based on a "single" supplier contract and on a contract with "multiple" suppliers.

Selection of three vendors

The Committee, meeting on June 12, 1984, decided that the Senate would be best served by giving Senators a choice of office systems. The Committee directed the staff to enter into contracts with the three companies whose systems rated highest and adopted regulations concerning the allocation of such equipment. Contracts were executed with Honeywell Information Systems, Inc., Data General Corp., and Prime Computer, Inc. A three-phase installation was begun in the fall of 1984. Phase 1 called for the installation of approximately ⅓ of the equipment allocation and all the requested services in all Senators Washington offices. Phase 2 called for the installation of the second third of the equipment to all offices. Phase 3 called for the development of a correspondence management, casework, and filing system, communications to State offices, and installation of the remaining equipment.

Each of the vendors was supplied with functional specifications of the Senate's on-line Correspondence Management System (CMS) and began developing their version of this system. Meanwhile, the contract for the CMS will continue until all the functions performed by this system are assumed by new office automation systems.

Installation of systems

A commitment was made to complete as many phase 1 installations as possible before January 1985. The Sergeant at Arms assigned four crews to install cables, and the Architect of the Capitol assigned three crews to make the electrical connections and install

floor receptacles. Each of the vendors was given space in Senate office buildings, in which they installed a "training" system.

Vendors scheduled private demonstrations for staff of each Senator to assist them in the selection of the vendor which was to supply the system to that office.

Phase 1 installation and staff training began in the fall. Senators were scheduled for installation according to seniority in the Senate.

By the end of December 1984, 60 offices had received training, and equipment had been installed in 55 offices.

COMPUTER CENTER EQUIPMENT (Sarman)

Upgrades to mainframes

During 1983, Computer Center and Technical Services staff studied the capability of the existing IBM 370/168's and IBM 370/158 to meet the Senate's computing needs for the next 5 years. From computer performance measurements performed by the Computer Center, it was apparent that the installed equipment did not have the capacity to accommodate the 25% compounded growth rate expected over the next 5 years.

The Rules Committee authorized the issuance of a request for proposal for upgrades on December 21, 1983. A benchmark was constructed which simulated the present work load. A Request For Proposals (RFP 84-1) was developed by Computer Center staff and was released to prospective vendors on January 13, 1984.

The RFP, instructions, and benchmark programs were issued to all companies which requested them. Vendors were required to run the benchmark to prove their proposed equipment could meet current and future growth requirement for the next 5 years.

Formal responses were received from Amdahl and IBM. The evaluation committee considered all submissions and found IBM's proposal superior for both cost and technical reasons and recommended that the IBM proposal be accepted.

A contract was authorized with IBM. An IBM 3081GX was installed in March and an IBM 3083EX was installed in December. The 370 equipment was released at various times during 1984.

SENATE INFORMATION RETRIEVAL SYSTEMS (Harvey)

Senators, committees, and officers of the Senate require independent, accurate, comprehensive, and timely information to assist them and their staffs in a wide variety of legislative tasks These include: the formulation of legislative issues and positions, the drafting of legislation and correspondence, the preparation of memoranda and reports, and the performance of a Senator's representative function. Through the use of authorized information retrieval systems, display and printer terminals in Washington and home State offices, and communications facilities for access to computer systems outside the Senate, Senators and their staffs have been provided with responsive access to a wide variety of legislative, research, news and information systems and services.

Senate Legis

The Senate's principal legislative information system, which is known as Legis, first became operational in 1977 at the start of the 95th Congress. Official Senate information concerning the sponsorship, co-sponsorship, official title, statement of purpose, and comprehensive floor, committee, subcommittee and conference status, together with scheduling and reporting data for bills, resolutions, and amendments, were entered and verified by staff of the Secretary of the Senate. With the completion of the Senate computer programming for the Senate's legislative measures, including floor amendments and their respective legislative status, and the installation in the Senate Computer Center (Office of the Sergeant at Arms of the Senate) of the initial versions of the Library of Congress' Scorpio, Logic Library, and Libra computer software, several important goals of the Rules and Administration Committee were realized. These included:

(1) systematic collection of committee scheduling information—including time, date, and location of committee, subcommittee, and conference meetings, hearings, and mark-ups and the availability of this information via terminals in every Senator's office;

(2) a nightly updated Legis/Scorpio data base for all Senate offices using the same retrieval language as that for accessing on-line data bases at the Library of Congress;

(3) on-line files of amendments pending on the Senate floor, the Majority Leader's daily schedule, the Assistant Majority Leader's Whip Notice, and News about Legis for all Senate users;

(4) on-line or overnight data exchange with the Library of Congress and the House of Representatives and the incorporation of Library and House data not previously in the Senate Legis data base.

The Senate Legis System has been implemented as an on-line, interactive data base computer system; it possess a flexible capability for expansion into all official areas of Senate activity. As an umbrella information system, Legis has now been extended to cover a wide variety of Senate official recordkeeping, printed reports, and on-line retrieval functions. The system was further designed to facilitate the exchange of information in a real-time mode over electronic communications links with the House of Representatives, the Library of Congress, and the Government Printing Office. Computer software has been designed and programmed for ease of modification as new procedures are adopted or changed, as new categories of information are added to the system, and as new report and computer terminal retrieval requirements are identified. Software costs have been shared by the Senate, the Library of Congress, and the House of Representatives. Where possible, software developed by one computer center has been transferred and installed in either of the other two computer centers.

Enhancement to Legis

During the 96th Congress, more summary and status information on bills, resolutions, and amendments was added to all Legis files. This includes statements of purpose for amendments, additional detailed status information for floor, committee, subcommittee, and conference actions, and cross reference information supplied by the Senate Daily Digest Office and the Bill Digest Section in the Congressional Research Service. This data is in addition to the digest, abstract, subject indexing and House of Representatives information already supplied to previous Bill Status and Bill Digest systems.

A number of additional Legis capabilities and related services were completed during 1978. Significant among these are:

Presidential Messages, Executive Communications, and Petitions and Memorials. Data was supplied to the Legis System by the Executive and Legislative Clerks beginning in January 1979;

Installation of new Scorpio retrieval system features, including full text search capability in the Senate Legis file and the Libra software for generating batch reports from Scorpio files. These features were made available to all Senate users beginning in early 1979;

Completion of an on-line programming task which provides the capability for designated Senate staff to add Senate subject terms to legislative and other items in the Legis system; and

Completion by the Senate User Support Group of user documentation for Legis, the on-line and batch Legis capabilities and data entry documentation for the Secretary of the Senate.

The Senate Computer Center also programmed reports for purposes of auditing official data base and for providing editing and verification capabilities to committee clerks, the Bill Clerk, the Daily Digest Clerk, and staff in the Senate Library.

Additional Legis and Scorpio display formats were provided for all Senate Legis users. These include forward and reverse chronology for all status actions, the sorting of status by subcommittees within the same committee, "all" and "summary" options for infor-

mation concerning a respective measure or amendment, and free text information regarding committee memberships, changes in committee sizes, temporary committees and committee memberships, and relevant legislative and party caucus information regarding committees and committee membership.

Concurrent with the achievement of these goals, a number of Legis printed reports authorized by the Rules Committee were programmed during the 95th and 96th Congresses by staff of the Senate Computer Center. The most important of these were official reports for the Secretary of the Senate, Senate committees, and each individual Senator. These reports contain comprehensive information of all Senate measures. Senate actions on House measures, and all final actions on measures which cleared both Houses. Important examples of these reports include:

Official ledgers provided to the Senate Bill Clerk for bills, resolutions, printed amendments, unprinted amendments, and all Congressional status actions for these legislative measures. These reports replace the manual ledgers in the Secretary's office.

The Index and History of bills and resolutions which assisted the Senate Journal Clerk, in the preparation of the Senate Journal since 1978;

Printed reports of bills, resolutions, and amendments for each Senate committee calendar clerk. These reports contain all official information for measures acted upon by each respective committee;

Legislative Activity Reports for each Senator. These reports are in six parts, organized by measures sponsored, measures co-sponsored, committee of referral for measures sponsored, committee of referral for measures co-sponsored, with a subject index to each of these legislative items at the back of the report;

On-line and batch reports providing current information on actions which have occurred in the Senate for the same day, and meetings, hearings, and conferences scheduled that same day; and

Legislative Tracking reports for Senators and committees; this Legis Service was announced to the Senate in December 1979.

Capabilities of legislative tracking reports

The legislative tracking service assists Senators and staff in monitoring legislation of particular interest. Whenever a legislative action occurs, or a co-sponsor is added, or an amendment is submitted for one of the measures being monitored, the new information about the measure is included in legislative tracking reports for the next day.

With Senate legislative tracking, legislation can be monitored several ways:

1. Senator's sponsored measures and amendments.
2. Senator's co-sponsored measures and amendments.
3. All measures referred to a particular committee or subcommittee (Senate or House).
4. Individual measures by measure number.

63-591 O - 86 - 2

5. All measures on a particular subject (using the indexing terms and phrases that are present in the Legis system).

In the daily legislative tracking report, measures are divided into the above categories. No measure is printed more than once. If, for example, a Senator's sponsored measures and all measures referred to a committee are being monitored, and a co-sponsor is added to one of the Senator's sponsored measures that was referred to the committee, the information about the new co-sponsor will appear in the "Sponsored Measures" section of the auto-tracking report, and will not appear in the "Committee Referral" section.

Additions in 1980

During the second session of the 96th Congress, additional information and capabilities were added to Legis. These included:

Co-sponsors added or withdrawn for use in the daily issue of the Congressional Record and the Senate Journal;

Completion of programming for the Legis subsystem to track all nominations received by the Senate and all confirmation actions taken thereon;

Simplified techniques for using the Senate Scheduling System were programmed by the Senate Computer Center; and

House floor amendments were added to the Senate Legis data base.

Additions in 1981: Rules and precedents

Two data base systems, both of which are described in detail below, were announced by the Rules Committee Chairman on November 16, 1981, in a "dear colleague" letter:

"On behalf of the Senate Majority Leader, Senator Howard H. Baker, and the Committee on Rules and Administration, I am pleased to announce the availability of a new information system for use by Senators and their staffs on computer terminals located in their Capitol and Senate Office Building suites. This new information system was authorized by the Committee at the request of the Majority Leader and is composed of Precedents of the Senate and the Senate Standing Rules. The System was developed by staff in the Secretary and Sergeant at Arms' offices, and the Rules Committee.

"All precedents which have occurred since June 30, 1980, have been entered into the system and thus serve to provide a supplement to the 1981 edition of Senate Procedure. Additional precedents will be entered as often as possible. In future years older precedents selected by the Parliamentarian for current applicability will be added to the Precedent Data Base.

"The first part of the Rules Data Base consists of the 42 Standing Rules. During the second session of this Congress, the nonstatutory standing orders and resolutions affecting the business of the Senate, and provisions of public laws relating to the Senate will be added to the Rules Data Base. As changes and additions occur to this information, the data base will be updated accordingly.

"The Majority Leader and I expect these data bases to be extremely valuable to Members and staff of the Senate. We welcome your comments and suggestions on this new information service."

Rules

The Standing Rules of the Senate are the embodiment of the provision in Article I, Section 5 of the Constitution which authorizes each House of Congress to "determine the Rules of its Proceedings." Originally adopted during the first session of the Congress in 1789, the Senate has readopted or made only seven general revisions of its rules since that time. The most recent of these revisions occurred with the adoption of S. Res. 274 by the Senate on November 14, 1979. Certain of the standing rules were subsequently consolidated and renumbered pursuant to S. Res. 389, agreed to by the Senate on March 25, 1980.

Just as the Senate is a continuing body, so too are its standing rules. The rules of the Senate continue from one Congress to another "unless they are changed as provided in these rules." When cloture is invoked, changing Senate rules requires "a two-thirds majority of the Senators present and voting, a quorum being present."

There are now 42 Standing Rules of the Senate, beginning with Rule I which establishes a president pro tempore who presides over the Senate in the absence of the Vice President as provided for in Section 3, Article 1, of the Constitution. Additional rules provide for the order of business in the Senate, procedures for floor consideration and debate of legislation, the Senate committee system and the jurisdiction and functions of its standing committees. Rules are also provided for executive sessions of the Senate and the consideration of treaties, nominations, and other matters.

The computerized retrieval system of the Senate rules contains all 42 rules together with the descriptive names of the rules and the subject indexing terms assigned to each rule by staff of the Committee on Rules and Administration. As changes occur to the rules, and as additional subject indexing terms are assigned to individual rules, the computerized system will be updated to reflect those changes and additions.

Precedents

The precedents of the Senate comprise the body of procedural law under which the Senate conducts its business. They are interpretations of the rules, standing and ad hoc orders and unanimous consent agreements of the Senate, as well as Constitutional and statutory provisions relevant to the Senate. A precedent occurs when the Presiding Officer rules on a point of order or responds to a parliamentary inquiry, and when the Senate votes on a Constitutional question, or on an appeal from a ruling of the Chair, or on a point of order which the Chair in its discretion submits to it. The Parliamentarian's Office, which interprets and complies the precedents, will enter them into the data base of this file so as to include the following elements: a subject matter heading and subheading, where appropriate; a headnote stating the procedural point enunciated; the statement of fact from which the precedent arose; and the citation to the Congressional Record.

Initially all precedents which have occurred since June 30, 1980, will be entered to provide a supplement to the 1981 edition of *Senate Procedure*. This file will be updated as often as possible,

given the interpretative nature of the data. In future years older precedents selected by the Parliamentarian will be added to the data base.

Legis nominations subsystem

The new Legis Nominations Subsystem was announced to all Senate users on March 23, 1981. This system contains information about all Presidential appointments requiring Senate confirmation. In addition to the Legis/Scorpio files for nominations, three new on-line Legis reports were made available. These are: "nominations received today;" "nomination status if acted upon today;" and "nominations on the Executive Calendar."

Senate agenda

On May 13, 1981, staff of the Senate Majority Leader's office began entering the Senate Agenda into the Legis computer system on display and printer terminals located in the Majority Leader's Capitol office suite. This daily floor schedule is made available each day the Senate is in session.

CRS-terminating programs

The newest on-line CRS data base, Terminating Programs, was requested by the Senate Majority Leader and the Chairman of the Rules and Administration Committee. The Terminating Programs File in the CRS American Law Division is a data base containing descriptions of federal programs or activities which are scheduled to expire on an ascertainable date. The file also contains a listing of one time and recurring reports due the Congress by federal agencies and the deadline dates for such reports. The generic term "Terminating Programs" refers to all types of programs, activities, or reports.

Information on each terminating program includes the expiration or deadline date, the bill number and public law date, the U.S. Code and Statutes at Large citation, congressional committee and subcommittee names, the name of the government organization with responsibility for the terminating program, the type of terminating program involved, and subject terms.

The file is updated whenever programs are created, added, changed, or terminated.

Additions in 1982

Important new printing capabilities were provided to Senate Legis users during 1982. These included overnight high speed printing from the Legis retrieval files; additional user defined options for the format and contents of printed reports; and the provision of separate subject indexes for Senators' legislative activities reports.

Business before the Senate

In November of 1982, the Sergeant at Arms announced an important new service, the Legis Report on Business before the United States Senate. This report contains a description of each item the Senate has considered during the day, and the time the item was taken up. The first item displayed is the business currently being considered by the Senate, followed by the business conducted earli-

er in the day. This report is updated throughout the day by the staff in the Republican Cloakroom and has become one of the most heavily used on-line Legis reports.

Developments in 1983

Major Legis activities in 1983 focused on enhancements to the efficiency of the Legis computer software, additional capabilities for overnight printing from all Legis files, and the installation of additional Legis/Scorpio software capabilities for the users-chiefly the "Send" command. The "Send" command allows one to send a document or report to a printer rather than print it one page at a time.

Committee assignment system

The Senate Committee Assignment System supports the committee assignment, eligibility, and statistical work of the Secretary for the Majority, the Secretary for the Minority, and the Committee on Rules and Administration. New reports and simplified data entry procedures were completed in early 1983.

New systems and services in 1984

Major new systems and services were provided to users throughout the Senate during 1984. In February, 1984, the office of the Assistant Majority Leader began entering the Majority Whip Notice, a report prepared weekly outlining the anticipated Senate legislative activity for the week ahead. In February, 1984, the first of two announcements was made regarding access by Legis users to information on record votes of the Senate.

Senate record votes in Legis

On February 28, 1984, the Sergeant at Arms announced the availability of a new information capability requested by the Majority and Minority Leaders and authorized by the Committee on Rules and Administration. The first announcement noted the availability within Legis of two reports on record votes of the Senate.

The first report allows one to see what record votes occurred that day on the Senate floor (report 67). This report is updated throughout the day by the Office of the Secretary of the Senate and contains the record vote number, the measure and/or amendment number, the yea-nay count and the result of the vote. This information is available to all Senate offices on their office terminals as soon as possible after the vote is taken on the floor.

The second report, VOTE, shows how each member voted on a particular Record vote. The tally, broken out by party, is also available as soon as possible after the vote is taken. This report contains the record vote number, the date and time of the vote, the measure and/or amendment number affected, the result, and how each Member voted, as entered by the Office of the Secretary of the Senate.

By using these two reports together, Senate staff are able to follow votes as they occur throughout the day.

In addition, the information in the VOTE reports is enlarged upon by the staff of the Democratic Policy Committee. A short description of each vote is added, as well as the title of the bill considered and pertinent information about the amendment, motion, bill

or other matter on which the vote occurred. The voting information in these reports is available on all record votes taken in the Senate since the first session of the 93d Congress (1973) through the current session. Its accuracy has been carefully maintained by staff of the Democratic Policy Committee and the Secretary of the Senate.

On April 23, 1984, the Sergeant at Arms announced that the LEGIS Report 67 would now include Record Votes for the 98th Congress from the past as well as for the current day. This report is now called "Record Votes for a Specific Date". Report 67 is updated throughout the day by the Office of the Secretary of the Senate and contains the record vote number, the measure and/or amendment number, the yea-nay count and the result of the vote. This information is available to all Senate offices on office terminals as soon as possible after the vote is taken on the floor and the information is entered by staff in the Secretary's office.

At the end of each news day, the editors create a news line-up which shows the stories the networks covered and the order in which they were broadcast. They also create a summary and analysis of the broadcast day, indicating prominent stories and comparing and contrasting the networks' treatment of these stories.

Network News offers an on-line Introduction and Tutorial to assist in use of the system. It is recommended that these features be used to gain an overview of the system and how it works.

In addition to displaying Network News on a terminal, it is possible to print partial or full reports either on office terminals or on the Computer Center's high-speed printers. The current day's reports are also available at the user assistance window in SDB–46 after 9:30 a.m. each work day.

Senate Legislative Calendar

On May 7, 1984, the Sergeant at Arms announced the availability in Legis of the Senate's Calendar of Business. This calendar is maintained and updated throughout each day the Senate is in session by staff in the Office of the Secretary of the Senate.

Specialized office automation systems

Committees and officers of the Senate have word processing, document preparation, and publishing requirements which differ markedly from the needs of an individual Senator's Washington and home State offices. In recognition of this, the Rules and Administration Committee authorized pilot and specialized procurements for the Secretary's office, the Legal and Legislative Counsels, and three standing committees: Armed Services, Foreign Relations, and Rules and Administration.

Systems for the Senate Legal Counsel, the Secretary of the Senate, and the Rules and Administrative Committee were selected following the issuance of an invitation to bid published in the "Commerce Business Daily". Specialized needs of the Legal Counsel included automatic footnoting and pagination and other word processing capabilities common to a law office which prepares lengthy and complex legal briefs. The system selected has been successfully installed in both the Legal Counsel and Secretary's offices. The

runner-up system was selected for the Rules and Administration Committee and was also successfully installed in 1984.

The Senate Legislative Counsel's needs are even more specialized: he and his staff draft bills, resolutions, and committee, floor, and conference amendments for Senators and committees. A significant upgrade to the Legislative Counsel's system was approved by the Rules Committee in the late fall of 1983. This system is fully compatible with the systems used by the House Legislative Counsel and the Government Printing Office. The new system is being successfully installed during the intervening months between the 98th and 99th Congresses.

Pilot office automation systems were also approved for the Armed Services and Foreign Relations Committees. One such system was installed for the purpose of word processing and document preparation. This system has been replaced with one of the three office automation systems selected for Senators' offices. The second pilot system, which contains the full range of office automation capabilities, has been successfully installed and is currently fully operational. This system ties together the committees, Capitol, and Senate office building suites.

Congressional Record: Background

The Congressional Record is the largest volume document produced by the Congress. Over 40,000 copies are printed daily and distributed as provided by law (44 U.S.C. 906). At the close of each session of Congress, about 2,500 copies of the daily proceedings are consolidated, indexed, printed, and bound as the permanent edition of the Record.

In January 1980, the Government Printing Office (GPO) began composing the House and Senate Journals electronically as a pilot test toward automation of the Congressional Record. The Journals were selected as the pilot project because of their similarity in format to the Record, and the fact that the Journal text can be composed and proofread over a period of several days in a production environment. In April, the GPO began electronic composition of the Extensions of Remarks portion of the Record. All the required software has been tested and proven for electronic composition of the remaining portions of the Record in January 1981. The House portion of the Congressional Record was successfully converted to electronic photo composition in 1981; the Senate part of the Record was converted at the beginning of 1982.

In conjunction with the long-range objectives of reducing costs, waste, and duplication in the composition, printing, and distribution of congressional documents, the micrographics task force of the Joint Committee on Printing (JCP) surveyed the current uses of the Record with a view toward reducing costs of the Congressional Record program via microform production and distribution.

In the fall of 1984, a technical task force recommended to the staff of the Joint Committee on Printing that daily magnetic tapes of the full text of each issue of the Congressional Record be made available to the Library of Congress' Automated Systems Office, the House of Representatives' House Information Systems, and the Computer Center in the United States Senate. It is anticipated that

each of these computer centers will prepare a retrieval system of the Record for their respective users during the early part of 1985.

Congressional Record Index

The task force on the Congressional Record Index has studied over the years the present procedures of the Congressional Record Index Office, the ways in which people access the information, and suggestions for improving the Congressional Record indexing procedures. The objective for automating and standardizing the index is to provide informational content of the Congressional Record easily and rapidly to the Members of Congress as generators and users of the information.

The Record Index task force presented the following recommendations to the Advisory Committee:

(1) That the Congressional Record Index Office and the Congressional Research Service use a common indexing vocabulary, wherever possible.

(2) That a group composed of representatives from all units using the Legislative Indexing Vocabulary (LIV) be established to agree on standard indexing terms, provide ongoing communications, and establish procedures for providing input to LIV.

(3) That the Congressional Record Office do its indexing on-line and as soon after production of the Record as possible.

(4) That the Congressional Record Index Office and Senate LEGIS should exchange data.

(5) That an on-line retrieval of an index to the Congressional Record be available to all Members of Congress, their staff, committees, and other legislative branch groups via a common data base.

(6) And, that a technical advisory group be established to work with GPO and the Congressional Record Index Office.

In December of 1981, the Joint Committee on Printing approved the implementation of the first phase of a project which ultimately will provide the Congress with an on-line index to the daily Congressional Record.

In the late fall of 1984, the Joint Committee on Printing approved the provision of the Congressional Record Index on magnetic tape to the Library of Congress, the House of Representatives, and the United States Senate, for the purpose of enabling each body or legislative branch agency to provide an on-line information retrieval capability to their respective users.

Committee meeting and hearing schedules

The Senate Committee Scheduling System, mandated for development by Senate Resolution 4, 95th Congress, has been implemented as part of Legis. Information about all Senate committee, subcommittee, and conference meetings, hearings, and markups is presently being entered by the Secretary of the Senate as soon as this information is known. Once entered, daily schedules for all such activities can be viewed on computer terminals located throughout the Senate. In addition, an individual Senator's schedule can be retrieved, as well as those for specific committees and subcommittees. Staff directors can also view all meetings and hearings scheduled for the members of their committees.

Data bases at the Library of Congress and the Congressional Research Service

New Scorpio features, including the capability for retrieving documents and abstracts by searching text words, were applied to several data bases. One of these, the Capitol Information Services' abstract file for the 94th through 98th Congress' daily issue of the Congressional Record was found to be much more effective as a research and reference file with the addition of a text retrieval capability.

Data files for three General Accounting Office directories of report abstract and index records were received by the Library's Information Systems Office. Two of these, the General Accounting Office's *directory of information sources and systems* and its *directory of recurring reports required of federal agencies* were brought up as Scorpio data bases for use by all Congressional offices. A third, the General Accounting Office *directory of federal program evaluations* was first made available during the 96th Congress.

In addition, the Library of Congress maintains an automated information system containing several data bases to which the Senate has access through computer terminals. These data bases include the Legislative Information File (beginning with the 93rd Congress), the Bibliographic Citation File, the Major Issues File, the Congressional Record Abstracts File, the National Referral Center Resources File, the Library of Congress Computerized Catalog, and the Machine Readable Catalog (MARC), and earlier cataloging records in a file known as Pre-Marc.

POLICY ANALYSIS SUPPORT SYSTEMS (Hicks)

The objectives of the policy analysis support systems are: (1) to provide and support committees with processing capabilities, both local and centralized, which facilitate the analysis of large amounts of complex data and the presentation of information in text, tabular, and graphic formats, (2) to maintain central computer files of commonly used budgetary, programmatic, geographic, and economic data, and (3) operation of highly sophisticated analysis systems on a request basis on behalf of committees and Senators for data analyses that surpass the capabilities of the systems deployed for end users.

Budget processing

Significant progress was made in 1984 in the addition of a new feature to the Senate budget processing capabilities. The new feature consists of 3270-Personal Computers (3270-PCs), the "1-2-3" electronic spreadsheet, Epson LQ-1500 table top dot matrix printers, Hewlett-Packard 7475A six color pen plotters and Answer/DB from Informatics on the IBM 308X central computers with Lotus/Answer on the 3270-PCs. The new facilities upgrade the analytical capabilities of the budget analysts on Senate committees with the type of hardware and software that has proliferated throughout the Federal Government, especially in the areas of budget preparation and analysis and financial management. The new technology affords users far greater flexibility in the ways they can construct data bases and format reports for their particular committee's needs. The lack of such flexibility in the past had been a major factor deterring many anaylsts from using the predecessor system.

A very small but very able and dedicated staff in the Senate Computer Center has performed the tasks of installing the equipment and, after learning how the equipment and the software work, identifying the areas in which users need to be proficient and in training users in small group sessions.

During 1984, over 100 committee staff persons, operating an installed base of approximately 50 3270-PC workstations, were trained by the Computer Center's Educational Services and Support Section in the operation of the 3270-PC and in the use of 1-2-3, the Disk Operating System (DOS 2.1), and Lotus/Answer.

Through the use of the Answer/DB software on the 308X central computers and the Lotus/Answer software on the 3270-PCs, the support that has been provided to users for the past seven years in the form of central data bases that can be accessed through telecommunications links will be continued in the new operating environment.

The two systems that comprised the Senate's budget analysis and processing capabilities for the past several years will be continued because they provide services and facilities that the new technolo-

gy, in spite of its many advantages, does not offer. Specifically, the Program Review System, an on-line, host-based system that combines data base creation, data manipulation, and reporting capabilities, together with central files of budget data from the Office of Management and Budget, the Congressional Budget Office, and several executive agencies, is especially well suited for the processing of files too large for electronic spreadsheets.[3] Similarly, the Budget Analysis System, a series of batch reports that provide recipients (principally staff members of Senators, Senate committees, and legislative staff agencies) with special analyses of the President's proposed budget (and revisions), is an economical and efficient service for which spreadsheets on microcomputers were never intended. In 1984, the number of recipients of Budget Analysis System reports remained fairly constant at around 100.[4]

During the year, the General Accounting Office decided to terminate the support it had been providing authorizing committees through the development of a programmatic data base and the acquisition of budgetary data at the programmatic level of detail. Committees that wish to consider programmatic detail will, therefore, have to do their own basic research to ensure that they have complete and accurate inventories of programs within their jurisdiction and will have to work directly with agency budget offices to obtain budget information at the program level. Whether or not some substitute for some parts of the General Accounting Office's operation needs to be created has not been raised. Certainly, in those cases where multiple committees deal with an agency, the role the General Accounting Office played as a single point of contact eliminated a potential for agencies having to respond to conflicting demands. At the very least, it is expected that the Senate Computer Center might be required in the future to provide technical advice and assistance to committee staff seeking to acquire budgetary data directly from an agency in a machine readable format, and, for large files, the Computer Center should be able to act as the entity responsible for receiving the data and making access possible through "downloading" to a PC.

Statistical analysis

A high level of activity prevailed throughout the year in the Statistical Analysis group of the Computer Center. The staff of four programmer/statisticians provided support to Senators, committees, leadership offices, and the Congressional Budget Office in many diverse areas, including:

> Tabulation of responses from newsletter surveys for Senators Andrews, Boschwitz, DeConcini, Exon, Grassley, Jepsen, Moynihan, and Quayle. The work included training staff members in the use of the Roscoe Restricted User Facility for direct data entry. The use of the Restricted User Facility has made it unnecessary for Senate offices to send work out to commercial vendors for keypunching and gives the office better control over the management of data and the overall analysis project.

---

[3] See Program Review System in the Appendix for a description of this system.

[4] See "Budget Analysis System" in the Appendix for a description of the various reports available.

Tabulation of employment, population, and labor force data. For the Committee on Banking, Housing, and Urban Affairs.

Development and operation of an agricultural commodity deficiency mode. For the Budget Committee.

Analysis of the utilization of private printers working under contract to the Government Printing Office. For the Joint Committee on Printing.

Analysis of the utilization of depository libraries. For the Joint Committee on Printing.

A study of the errors in forecasts of various economic indicators. For the Joint Economic Committee.

A study of the fiscal condition of cities. For the Joint Economic Committee.

A study of the effects of certain economic factors on the behavior and success of venture capital companies. For the Joint Economic Committee.

A study of facilities in housing for the aging ("Project 202" housing). For the Special Committee on Aging.

A study of the capital costs and loan repayments of hospitals receiving funds under the Hill-Burton Act. For the Committee on Finance.

Economic time series analysis. For the Republican Policy Committee.

Analysis of the differences and similarities in the responsibilities and resources of Secretaries-General of Parliamentary Bodies. For the Secretary of the Senate.

Development of a model to assist in a study of the relationship between money supply and interest rates. For the Committee on the Budget and the Congressional Budget Office.

Operation of a vector autoregressional econometric model and evaluation of a new structural econometric model. For the Committee on the Budget and the Congressional Budget Office.

Also, the staff completed and published a comparative analysis of 18 econometric models for use on standalone microcomputers.[5]

Economic analysis

In 1984 the Committee on the Budget and the Joint Economic Committee continued to use the econometric analysis services of two commercial vendors: Chase Econometric Associates, Inc. (Chase), and Data Resources, Inc. (DRI)

Both Chase and DRI developed capabilities during the year through which end users such as the two committees can download data from the vendor's data bases for local processing on a microcomputer equipped with communications software and a spreadsheet such as Lotus 1-2-3 or a statistical or econometric package. Both committees have begun to make extensive use of such facilities, which enables them to significantly increase the amount of work they can do for the funds provided for this service.

The committees' use of these services was as "party-participants" in "hill wide" contracts the basic license fees of which are paid as follows: Chase, by the House Committee on House Administration

[5] See "Statistical Analysis Services" in the Appendix for a description of this facility.

and the Senate Computer Center; and Data Resources, by the Congressional Budget Office, the Congressional Research Service, and the General Accounting Office.

Geographic reporting system

During 1984, the Computer Center developed the capability to produce summary tabulations and analytical reports from the new Consolidated Federal Funds Report (CFFR) tapes. Reports were produced for Senators and committees from the quarterly CFFR tapes as well as from the FAADS (Federal Assistance Awards Data System) tapes which have been received for several years. CFFR and FAADS data tapes are received from the Bureau of the Census.[6]

In addition to the standard reports provided to each Senator for his or her State, approximately fifty requests for special reports were processed.

Also, the Computer Center's system was entirely rewritten in the Statistical Analysis System (SAS). Previously, the Table Producing Language (TPL), which was obtained several years ago from the Department of Labor for $100, was used. SAS, a general purpose statistical package, which was also obtained several years ago for general statistical work, provides some flexibility in analysis and in report design that TPL did not.

During the year staff of the Computer Center and the Committee on Rules and Administration participated in numerous meetings with staff of the Office of Management and Budget, the Bureau of the Census, various executive agencies, and State and local governments with particular focus on understanding the limitations of the CFFR data and defining the extent to which it can be used.[7]

Graphics

Progress was made in a number of areas related to providing graphic displays of information. In the Senate Computer Center, a small graphics work area, containing a variety of stand alone and host connected equipment, was set up for the use of staff from committees or Senators' offices. Working on their own or with advice and assistance from the Computer Center staff, the users would enter their own data and prepare their own graphic displays, using either microcomputer software or IBM's Graphic Data Display Manager (GDDM) on the central host processor. This graphics capability is principally an aid for analysis because of the small format (letter size), and only secondarily a means of preparing finished products for formal presentations.

In the Service Department a facility was established to produce large (e.g. four feet by six feet) graphics displays. Offices needing such products bring rough sketches of what they want to the Service Department, where a trained operator produces the finished product. This graphics facility is principally for the production of large displays for formal presentations to groups. The products can range from something as simple as a few words in large block letters to intricate statistical charts.

---

[6] See note at the end of this section for references to further information.
[7] See "Geographic Reporting Systems" in the Appendix.

The third development in the graphics area is the IBM 3270-PC workstation. These devices, which have high resolution graphics displays were deployed, with six color pen plotters, to budget analysts on the staff of Senate committees. Virtually all of the users of the graphics center described in paragraph one of this section are in this category, so they no longer need to spend hours away from their offices and will not be in heavy competition with each other for time with a graphics device.[8]

Mass-mail

Mass-mail regulations adopted by the Committee on Rules and Administration authorized new services to facilitate more efficient mail handling by Senators' offices. One of the new services provided Senators with a new way to respond to incoming constituent mail generated by organized mail campaigns. Under the new procedure, Senators can transfer such mail to the Sergeant at Arms who in turn has the names and addresses keypunched by commercial contractors. The contractors return a magnetic tape containing the names and addresses to the Senate Computer Center where they are added to the Senators' mail files. Labels printed from the mail file are then used with "Dear Friend" type response letters. Through this technique, repetitions of the situations where the other work of an office would come to a virtual standstill while everyone worked nights and weekends for months to enter names into the Correspondence Management System should not occur.

A second new procedure allows the use of postal patron mail for a two-page newsletter whenever a name-addressed mailing would go to more than 73.3 percent of the addresses in a mailing area. The percentage represents the point at which a postal patron mailing becomes more economical than name-addressed mail, but reflects only differential postage and Service Department operations costs. Consideration of all costs is expected to support an even wider use of postal patron mail in the future.

The new regulations also ended some wasteful practices, such as the use of envelopes for newsletters, and established a basis for more efficient operations in a number of areas such as: (1) standardizing the postal endorsements that can be used and defining the circumstances when certain Posted endorsements, can be used, and (2) providing Senators with information on the cost of their mass-mailings.

Through internal management improvements and extensive coordination with the Postal Service, the Senate Service Department was able to use the "carrier route presort" rate class extensively, at a savings of over $32 million compared with the cost to send the same volume of mail at the first class rate. Also, the Service Department, through close coordination with Senators' offices was able to schedule newsletter production so as to handle a record volume of 314 million pieces, sometimes processing volumes approaching two million a day.

---

[8] See "Charts and Graphs" in the Appendix for further information. 1/15/85

OFFICE AUTOMATION FOR COMMITTEES (Hicks)

After training and installation for Phase I of the Member Office Automation project were completed, efforts were begun with respect to committees. Packets prepared by staff of the Rules Committee and the Senate Computer Center were distributed to staff of committees for their use in determining and documenting their office automation requirements. Upon completion of their feasibility study and OA plan each committee will be authorized systems from the three vendors selected to supply systems to Senators' offices. If none of the three can satisfy a committee's requirements, the Rules Committee will issue a special Request for Proposals for a system to satisfy that particular committee's needs.

By the end of 1984, all committees had been visited and briefed on the project; office automation plans had been submitted to the Rules Committee by three committees; and one plan had been approved and training and installation begun. The one committee (the Committee on Armed Services) had previously contracted with a consulting company for a requirements survey, which was completed when committees generally were advised to begin preparing office automation plans. Because of the high priority being given to OA for Senators' offices it is not expected that training or installation for additional committees could begin before March or April of 1985. It should be noted that two committees (Foreign Relations and Rules and Administration) were provided with OA equipment at the time of the pilot test of office automation in Senators' offices.

APPENDIX I

AUTOMATION SERVICES TO SENATORS AND COMMITTEES

The Committee on Rules and Administration and the Sergeant at Arms provide a variety of automation services for the cost-effective operation of the Senate. These servies are available to Senators and their committees in three general categories. Information Retrieval Systems provide Senators and their staffs with responsive access to information that will assist them in their legislative tasks. Office Automation Systems respond to Senators needs for orderly, controlled and cost-effective operation of their offices. Policy Analysis Support Systems provide the computer capability and technical support needed to effectively assist the Senate in the analysis of policy issues.

Systems are listed in alphabetical order within those three categories.

INFORMATION RETRIEVAL SYSTEMS

Juris—legal information retrieval

Juris, an acronym for Justice Retrieval and Inquiry System, is an information retrieval system containing case law, Modern Federal Practice Digest, Statutory Law, and over 4,000 briefs filed by the litigating divisions of Justice and selected by attorneys' offices. The data base is available on subscription and maintained by the Department of Justice. The Senate Legislative Counsel and the Senate Legal Counsel both use Juris. In addition, the Legislative Counsel is experimenting with the use of the pilot statutory retrieval system developed by House Information Systems as part of their integrated law revision and retrieval system for the House of Representatives Law Revision Counsel. Statutory data for the system is supplied from the publication developed by the Government Printing Office.

Legis

The Senate Legislative Information System (Legis) first became fully operational at the beginning of the 95th Congress. Official Senate information for bills, resolutions, and amendments concerning the sponsorship, co-sponsorship, official title, and statements of purpose, as well as the comprehensive floor, committee, subcommittee and conference status, and scheduling and reporting data were entered and verified by staff of the Secretary of the Senate. With the completion of the Senate computer programming for the Senate legislative measures, including floor amendments and their respective legislative status, together with the installation in the Senate Computer Center of the Library of Congress' Scorpio, Logic Library and Libra Software, several important goals of the Rules and Administration Committee were realized. These include:

(1) committee scheduling; time, date and location of committee meetings, hearings, and conferences available via terminals in every Senator's office;

(2) a nightly updated Legis/Scorpio data base for all Senate users using the same retrieval language as on-line data bases at the Library of Congress; 100 Senators' offices and 14 committees became fully trained Legis users during the 96th Congress;

(3) on-line files of amendments pending on the Senate floor, the Majority Leader's Daily Schedule, the Assistant Majority Leader's Whip Notice, and News about Legis for all Senate users;

(4) on-line or overnight data exchange with the Library of Congress and House Information Systems and the incorporation of Library and House data not previously in the Senate Legis data base.

The Senate Legis System has been implemented as an on-line, interactive data base computer system possessing a flexible capability for expansion into all official areas of Senate activity. As an umbrella information system, Legis has now been extended to cover a wide variety of Senate official recordkeeping, printed reports, and on-line retrieval functions. The system was further designed to facilitate the exchange of information in an on-line mode with the House of Representatives, the Library of Congress, and the Government Printing Office. Computer software has

been designed and programmed for ease of modification as new procedures are adopted or modified, as new categories of information are added to the system, and as new report and computer terminal retrieval requirements are identified. Software developed by one computer center has been transferred and installed in either of the other two computer centers.

During the 97th Congress, more summary and status information on bills, resolutions, and amendments was added to all Legis files. This includes statements of purpose for amendments, additional detailed status information for floor, committee, subcommittee, and conference actions, and cross reference information supplied by the Senate Daily Digest Office and the Bill Digest Section in the Congressional Research Service. This data is in addition to the digest, abstract, subject indexing and House of Representatives information already supplied to previous Bill Status and Bill Digest systems.

A number of additional Legis capabilities and related services were completed after its introduction. Significant among these are:

Presidential Messages, Executive Communication, and Petitions and Memorials. Data was supplied to the Legis System by the Executive and Legislative Journal Clerks beginning in January 1979;

Nominations received by the Senate and the Executive Clerk beginning in January 1981;

Installation of new Scorpio retrieval system features, including full text search capability in the Senate Legis file and the Libra software for generating batch reports from Scorpio files. These features were made available to all Senate users beginning in early 1979;

Completion of an on-line programming task which provides the capability for designated Senate staff to add Senate subject terms to legislative and other items in the Legis system; and

Completion by the Senate User Support Group of user documentation for Legis, the on-line and batch Legis capaoilities, and data entry documentation for the Secretary of the Senate;

Co-sponsors added or withdrawn for use in the daily issue of the Congressional Record and the Senate Journal;

Simplified techniques for using the Senate Scheduling System for all Senate users; and

House floor amendments added to Senate Legis data base.

The Senate Computer Center also programmed reports for purposes of auditing official data bases and for providing editing and verification capabilities to committee clerks, the Bill Clerk, the Daily Digest Clerk, and staff in the Senate Library.

Additional Legis and Scorpio display formats have been provided for all Senate Legis users. These include forward and reverse chronology for all status actions, the sorting of status by subcommittees within the same committee, "all" and "summary" options for information concerning a respective measure or amendment, and free text information regarding committee membership, changes in committee sizes, temporary committees and committee memberships, and relevant legislative and party caucus information regarding committees and committee membership.

Concurrent with the achievement of these goals, a number of Legis printed reports authorized by the Rules Committee were programmed during the 95th and 96th Congresses by staff of the Senate Computer Center. The most important of these were official reports for the Secretary of the Senate, Senate committees, and each individual Senator. These reports contain comprehensive information of all Senate measures, Senate actions on House measures, and all final actions on measures which cleared both Houses. Important examples of these reports include:

Official ledgers provided to the Senate Bill Clerk for bills, resolutions, printed amendments, unprinted amendments, and all Congressional status actions for these legislative measures. These reports replace the manual ledgers in the Secretary's Office;

The Index and History of bills resolutions which have assisted the Senate Journal Clerk in the preparation of the Senate Journal since 1978;

Printed reports of bills, resolutions, and amendments for each Senate committee calendar clerk. These reports contain all official information for measures acted upon each respective committee;

Legislative Activity Reports for each Senator. These reports are in six parts, organized by measures sponsored, measures co-sponsored, committee of referral for measures sponsored, committee of referral for measures co-sponsored, with a subject index to each of these legislative items at the back of the report;

On-line and batch reports providing current information on actions which have occurred in the Senate for the same day, and meetings, hearings, and conferences scheduled that same day; and

Legislative tracking reporting capability for Senators and committees; this Legis Service became available to the Senate in December 1979.

Legislative tracking

The legislative tracking service assists Senators and staff in monitoring legislation of particular interest. Whenever a legislative action occurs, or a co-sponsor is added, or an amendment is submitted for one of the measures being monitored, the new information about the measure is included in autotracking reports for the next day.

With this service, legislation can be monitored several ways:

1. Senators' sponsored measures and amendments.
2. Senators' co-sponsored measures and amendments.
3. All measures referred to a particular committee or subcommittee (Senate or House).
4. Individual measures by measure number.
5. All measures on a particular subject (using the indexing terms and phrases that are present in the Legis system).

In the daily tracking report, measures are divided into the above five categories. No measure is printed more than once. If, for example, a Senator's sponsored measures and all measures referred to a committee are being monitored, and a co-sponsor is added to one of the senator's sponsored measures that was referred to committee, the information about the new co-sponsor will appear in the "Sponsored Measures" section of the tracking report, and will not appear in the "Committee Referral" section.

The legislative tracking reports are printed on prepunched three-hole paper. Two options are available as to the form of the reports:

1. Legislative status information: either entire legislative history whenever a legislative action occurs, or only the new actions.
2. The report can be printed in "continuous print" list format, or it can be printed with each measure starting on a new page.

Legis committee meeting and hearing schedules

The Senate Committee Scheduling System, mandated for development by the Rules Committee in S. Res. 4, 95th Congress, has been implemented as part of Legis. Information about all Senate committee, subcommittee, and conference meetings, hearings, and markups is presently being entered by the Secretary of the Senate as soon as this information is known. Once entered, daily schedules for all such activities can be viewed on computer terminals located throughout the Senate. In addition, an individual Senator's schedule can be retrieved, as well as those for specific committees and subcommittees. Staff directors can also view all meeting and hearings scheduled for the members of their committees.

Library of Congress and Congressional Research Service Data Bases

New Scorpio features, including the capability for retrieving documents and abstracts by searching text words, were applied to several data bases. One of these, the Capitol Information Services' abstract file for the 94th, 95th, and 96th Congress' daily issue of the Congressional Record was found to be much more effective as a research and reference file with the addition of a text retrieval capability.

Data files for three General Accounting Office directories of report abstract and index records were recevied by the Library's Information Systems Office. Two of these, General Accounting Office's *directory of information sources and systems* and its *directory of recurring reports required of federal agencies* were brought up as Scorpio data bases for use by all Congressional offices. A third, the General Accounting Office *directory of Federal program evaluations* was made available during the first session of the 96th Congress.

In addition, the Library of Congress maintains an automated information system containing several data bases to which the Senate has access through computer terminals. These data bases include the Legislative Information File (beginning with the 93d Congress), the Bibliographic Citation File, the Major Issues File, the Congressional Record Abstracts File, the National Referral Center Resources File, the Library of Congress Computerized Catalog, and the Machine Readable Catalog (MARC).

Vote tally

A record of all quorum calls and record votes occurring on the Senate floor is maintained by the Bill Clerk via terminals and accessed by the Republican Policy Committee, the Republican Conference, and the Democratic Policy Committee. Work has been completed to expand the capabilities of the present system and to provide access by individual Senators to displays of Senate record votes.

OFFICE AUTOMATION SYSTEMS

Text processing and records management systems provide Senators, committees, and administrative offices of the Senate timely, cost effective control over the growing volume and diversity of congressional documents. Senate offices allocate substantial staff resources to the production, collection, filing, and disposition of a wide variety of publications which they generate and receive. Effective management of these documents is crucial to providing information to Senators and committees for their legislative, investigative, and agency oversight activities.

The objectives for implementing computer assisted records management and text processing systems in the Senate are to reduce the cost of drafting and printing congressional documents, improve the timeliness and quality of legislative documents, and provide rapid and reliable access to office and committee information.

Bill drafting

The Computer aided bill preparation system provides a comprehensive capability to the Office of Legislative Counsel for drafting bills, amendments, simple, concurrent, and joint resolutions, and other documents required by the Senate; and provides for the transfer of legislative measures to the GPO for direct electronic composition, or to the House for redrafting.

Correspondence management system

The Correspondence Management System, referred to as CMS, aids Senators in answering constituent letters promptly, accurately, and in a personalized manner. CMS is a complete office management system offering a unified approach to constituent support functions. CMS facilitates control over office management, allows follow-up with constituents interested in specific legislative issues, and creates an historic record of all office activity for subsequent use by the Senator and his staff.

Electronic printing

Various techniques for electronically composing documents generated by and for committees are available. Committee staff can use ATMS to create committee calendars, committee reports, and other documents for electronic composition at GPO. Committees can order hearing transcripts from commercial reporting firms on magnetic tape in a format compatible for electronic composition by the Government Printing Office.

Equipment inventory records management system

The Equipment Inventory Records Management System provides the Sergeant at Arms with an automated method for maintaining accurate up-to-date status of equipment inventory, and for generating detailed and summary information from the data base in a timely manner.

Hearing transcripts

Application of computer technology to the preparation of hearing transcripts enable the Senate to reduce the cost of printing hearings by the elimination of duplicative keyboarding, and to increase the timeliness of printed hearings for the Senate. Nearly 85% of all transcripts of hearings are supplied to Senate committees and subcommittees in this form. With this high degree of committee acceptance of the new technology, the cost of printing committee hearings has been reduced substantially.

The Secretary of the Senate provides a verification of page counts based on computer analysis of the magnetic tape to accompany vouchers for payment.

Indexing: Election Campaign Records

The Election Campaign Records Indexing System was created in 1972 to help the Office of Public Records meet the requirements of the Federal Election Campaign Act of 1971. This system provides for the indexing of documents submitted by candidates and committees supporting candidates, and the cross-referencing of these documents to provide faster access to specific data on microfilm.

Indexing: Inquiries and investigations

Through the Inquiries and Investigations Abstracting and Indexing System, voluminous files of documents pertaining to a committee investigation can be abstracted and indexed for production of chronological and relational lists (such as authors, subject, key-words, etc.) for maintenance of indexes to the documents themselves. The systems provide key-word-in-context (kwic) capabilities, location of records using single or multiple, coded or free-text, data elements, and on-line entry, edit and report production.

Indexing: Legislative histories

Through the Legislative History Indexing System, indexes to legislative histories can be prepared. The indexes can be multi-level and can reference individuals, subject terms, and provision numbers. The indexes can be updated on-line if desired. (The first legislative history index prepared using this system was of the Congressional Budget and Impoundment Control Act of 1974, prepared at the request of the Congressional Budget Office. The ten volumes of hearings, reports and other documents comprising the history are available on microfilm.)

Indexing: Litigation files

The Litigation Indexing System provides the Senate Legal Counsel with capabilities for entry, storage, cross-referencing, and retrieval of document abstracts relating to litigation files.

In addition to creation and access of indexes to files through interactive terminals, the system supports edits at time of entry, updating capabilities, comparative and relational searches, and selective sorts. Limited output can be displayed on-line and extensive output can be printed.

Indexing: Office files

The Office Index System provides a simple and flexible cross-indexing service for the organization of office documents. Cross-indexing is a useful tool for reliable retrieval of documents stored on microfilm, assembling a Senator's legislative history, cross-indexing relevant printed and internal material, and tracking selected projects.

Mail: Support for response to organized mail campaigns

Senators can, with the prior approval of the Committee on Rules and Administration, transfer mail received as a result of an organized mail campaign to the Sergeant at Arms who will in turn have the names and addresses key-punched for use in preparing labels for use with "Dear Friend" letters.

Microfilming

Microfilming office records provides a storage and retrieval system for the management of office files. Microfilm reduces the storage space occupied by the same records on paper, eliminates valuable manhours spent in sorting and filing paper records, and prevents misfiling, alteration, and loss. Requests for information may be made in person or by phone (224–7176).

Micrographics publications

The Senate Library has an extensive collection of congressional publications, executive agency documents, newspapers, magazines, and other materials on microfiche and microfilm. Users of the microfilm collection may either read the materials on a reader in the Library's Micrographics Center or borrow a portable reader from the Library to use in his/her office. The microfilm material can be reproduced on reader-printers located in the Senate Library. The Library uses automated reference services, such as the New York Times Information Bank and Nexis, to locate specific information for Senators and their staffs.

Newsletter address file

The Newsletter Address File permits Senators to store and update constituent names and addresses. Upon request, selected names and addresses are printed on mailing labels to be attached to newsletters.

Parking department

The on-line Parking System provides a method for efficient use of the available parking space and to administer the allocation of this space.

Policy Committee information system

An automated system provides statistical analyses of attendance, vote times, and voting patterns on a recurring basis.

POLICY ANALYSIS SUPPORT SYSTEMS

Budget analysis system

The reports in the Budget Analysis System are produced from the Office of Management and Budget Budget Preparation System tapes upon release of the President's budget recommendations in January, March, and July. Special runs are made as requested.

The purpose of the Budget Analysis System is to extract and resequence information on the Budget Preparation System tapes to display information about the budget recommendations and reestimates not reflected in published budget documents.

Analysis reports can be prepared using such elements as:

1. organizational unit (agency or bureau);
2. object classification (personnel, rent, etc.);
3. function or subfunction;
4. fund type (trust fund, proprietary, etc.);
5. new vs. existing programs;
6. receipt types (general fund, proprietary, etc.);
7. program and financing schedule resource measures (obligations, outlays, unobligated balances, etc.);
8. outlays by source of budget authority (new budget authority, obligated balances, unobligated balances, etc.);
9. controllable vs. uncontrollable spending; and
10. authorizing and spending committee jurisdiction.

A Directory of BAS Reports is available to requesting offices. The Directory includes a description and a sample page for each report.

The Program Review System is also used to prepare special reports requested by Senators and committees, such as:

1. exploration of the effects of different percentage changes in selected object classes, functions, and accounts;
2. comparison of current services estimates with administration requests; or
3. display of the estimates for the four years following the budget year.

Charts and graphs

Facilities for the production of large charts and graphs are available in the Senate Service Department. A small graphics center is located in the Senate Computer Center that is available to staff for use on a request basis. (As graphics capabilities become more widely available through office automation, it is expected that the graphics center in the Computer Center will no longer be needed.)

Consolidated Federal funds report

See "Geographic Reporting System"

Econometric modeling

Three econometric modeling services are available on subscription to committees of the Senate: Chase Econometric Associates, Data Resources, Inc. and Wharton Econometric Forecasting Associates. These models provide the capability to test forecasts of U.S. economic conditions, elements of consumptive expenditure, investment, foreign trade, employment, and other items of national interest. Economic analysis through the Regression Analysis of Time Series program of VAR Econometrics is also available at the Senate Computer Center.

Federal assistance awards data system

See "Geographic Reporting System"

Geographic reporting system

Through the Geographic Reporting System (GRS) reports are prepared on a regular basis as quarterly data tapes are received from the Bureau of the Census from the Federal Assistance Awards Data System (FAADS) and from the Consolidated Federal Funds Report (CFFR) system. Special reports are prepared on request.

The CFFR is the successor to the Federal Outlays Reports previously compiled and published by the Community Services Administration. The CFFR reports are intended to cover all Federal expenditures to the State level and in some cases to the county and large city levels. FAADS covers only Federal assistance (such as grants) data and in many cases the information is at recipient level.

Data from both systems is received on tape from the Bureau of the Census and loaded into a general purpose statistical package at the Senate Computer Center. A wide variety of reports are available to support analysis, such as, distribution by

CFDA (Catalog of Federal Domestic Assistance) number, by agency, by type of assistance, by budget function, by substate area, by State vs. United States total, by State vs. surrounding States (or any other specified State), etc. Data can be displayed in raw numbers or as percentage distributions or both.

Graphics

See "Charts and Graphs"

Program review system

The Program Review System (PRS) is an on-line computer system operated on the central 308X host processors in the Senate Computer Center. Central files of official budget data can be accessed and reports generated. Files specific to a particular committee can be created and data copied to them from the central files. One of the design assumptions of the system is that it would be used directly by high level analysts. It is, therefore, largely "command driven" (rather than "menu") and is designed to require the minimum of direct data entry by committee staff members. The system handles large data files and has an extremely flexible report writer from the standpoint of record selection, sequencing, and report definition. It has been used in the past for committees' views and estimates reports, for tracking of budget related legislative actions, for "scorekeeping" by authorizing committees, and for special analyses of the cost and geographic cost distribution of proposed legislation. Even though PRS may be superseded by electronic spreadsheets (such as Lotus 1-2-3) in many ways, it will be maintained for use in those cases where it is the appropriate technique to manage and analyze a file of data.

Questionnaire tabulation

Computer programs are available that provide simple tabulations, cross tabulations, and frequency distributions of survey data.

Statistical analysis and specialized data bases

The principal uses of the statistical analysis capability are: (1) tabulation and analysis of constituent surveys by Senators, either multi-issue surveys or in-depth surveys on a single issue; (2) analysis of results of surveys conducted by committees, or of other data acquired by committees; and (3) direct analysis by committees of information in specialized data bases. Surveys conducted by committees are typically related to a particular commercial, industrial, consumer, or other group associated with a policy issue. Both U.S. maps and standard business graphs (bar charts, pie charts, scatter diagrams, curves) can be prepared in support of surveys and investigations.

In surveys, statistically reliable results are sought through the use of scientifically selected samples and followup of non-responses. The Planning and Survey Research Section of the CRS General Government Division, the staff of the Senate Computer Center's Statistical Analysis Section, and the Rules Committee's Technical Services staff work together in assisting committees' and Senators' offices in sample selection, design of survey instruments, and interpretation of results. Standard procedures have been developed for handling survey questionnaires, followup letters, and responses. Copies are available on request.

Several specialized data bases have been established for committees. With such data bases committees can maintain and update information on subjects within their jurisdiction and test the results of alternate policies.

APPENDIX II

SERVICES OF THE SERGEANT AT ARMS

Equipment and services as authorized by the Committee on Rules and Administration are provided through the Office of the Sergeant at Arms. The Office consists of the Service, Parking, and Telecommunications Departments; the Capitol Police; and the Computer Center.

Capitol Police

The Capitol Police are governed by the three-man Capitol Police Board, one of whose members is the Senate Sergeant at Arms. The Rules Committee has authorized the Sergeant at Arms to implement the information system support requirements for time and attendance, inventory control, etc., submitted by the Capitol Police and he has directed the Computer Center to prepare an implementation schedule.

Computer Center

The Senate Computer Center (SCC) is located in a building separated from the main Senate office buildings but maintains a facility in the Dirksen Building to make computer services and distribution of reports more accessible and convenient to Senate offices.

The SCC is equipped with an IBM 3081-GX and an IBM 3083-EX operating under MVS/SP. On-line processing support to Senators' Washington and State offices is provided through a network of private cable, dial-up, and leased carrier facilities connected to either data switching equipment or to the COMTEN 3690 communications processors located at the SCC. The COMTEN units also provide data communications to the Library of Congress and other outside computer services.

All Senators and most committees are furnished computer terminals to access and add to various data bases. All data bases are initiated and maintained by responsible user offices via terminals in those offices.

There is no data entry facility in the SCC.

Parking department

This department administers and allocates the available parking space. To this end, the on-line Parking System was developed and is operational in the Computer Center.

Service department

This department is responsible for supplying non-computer office equipment such as automatic typewriters and mailroom equipment to Senate offices. There is an on-line inventory system to assist the department in controlling the authorized equipment.

The department prepares, addresses, and mails newsletters for Senators' offices using labels produced by the Computer Center and enforces the franking rules as they pertain to newsletters.

Microfilming of vital documents is performed by the Micrographics Section of the Service Department.

Telecommunications department

This department is responsible for the supply and management of telecommunications services to Senate offices. The Computer Center has developed a system which processes the telephone company billing tapes to assist in auditing these voluminous records.

Training and assistance

Training and user assistance is provided by the Sergeant at Arms. The Senate Educational Services staff will answer general questions relating to office automation, and provide assistance in accessing the computer. Training courses for Legis, Scorpio, ATMS and the Program Review System include personal instruction, training manuals, and practice in using the systems via terminals (phone 224-1517).

CMS training is provided to offices by the CMS-Senate User Representative staff (phone 224-5912).

Questions concerning policy on computer usage should be directed to the Committee on Rules and Administration (phone 224-9078).

○

63-591 (44)